UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,290	05/25/2000	James E Carey	1958.2001-000	5934

			EXAMINER
21005	7590	11/10/2003	

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EXAMINER
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ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 August 2003_ .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-36_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-36_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1.   Claims 1- 36 are presented for examination.

Response to Arguments

2.   Applicant's arguments filed 8/14/03 have been fully considered but they are not

persuasive for the reason set forth below.

In contrary to applicant's remark, page 9 – 10, in which the prior arts did not discuss a

associating a task queue with a respective worker thread. The Office would like to point out, in

the reference by Zolnowsky, in which fig. 5 and col. 7, lines 12 – 56 (also in applicant's remarks,

page 9) show a multiprocessor environment. Each processor has a dispatch queue (fig. 5). In

applicant's own word, page 9, Zolnowsky teaches a method for scheduling threads in a

multiprocessor system with one thread per processor. In connection, there must be a task queue

dispatched to at least one thread, for each processor, in a multiprocessing system; hence, creating

a multi-threaded environment, in which there is a task associated with a working thread.

As further notes, it is considered common and well known in the art, where, in a single

processing environment—single processor system, many applications/programs could be opened

concurrently, which then can be understood as multi-threaded environment in a single-processing

system. Therefore, without an indication of parallel queued threads processes, one may argue

such limitation as claimed, in a single processor system, much less in a multi-processor system.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 1, 4 - 7, 10, 13 – 16, 19, 22, 23 – 25, 28, 31 - 32 are rejected under 35 U.S.C.

103(a) as being unpatentable over Zolnowsky (US Pat. 5,826,081) in view of Sullivan (US Pat.

5,438,680).

Regarding **claim 1**, Zolnowsky discloses in a multithreaded computing environment, a

method of processing computing tasks (fig. 4A, 4B, and 5), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract);

defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(fig. 5, abstract);

associating each task queue with a respective worker thread (col. 2, lines 18 – 28).

However, Zolnowsky did not clearly teach the process of assigning a task to a task queue

in an essentially random fashion. This feature can be found in Sullivan in which tasks are simply

assigned to processors in a generally random fashion (col. 6, lines 35 – 61). Therefore, it is

obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this

feature to Zolnowsky to optimize the system performance with task assignment.

Regarding **claim 4**, Zolnowsky discloses the method of claim 1 further comprising, from a work thread, processing a task from the associated task queue (col. 2, lines 18 – 28).

Regarding **claim 5**, Zolnowsky discloses the method of claim 1 further comprising, from a work thread, processing a task from a task queue not associated with the thread (col. 2, lines 18 – 28).

Claims 7, 10, 16, 19, 25 and 28 are rejected on the same ground as stated in claim 1 above.

Claims 6, 15 and 24 are rejected on the same ground as stated in claims 1 and 5 above.

Claims 13, 14, 22, 23, 31, and 32 are rejected on the same ground as stated in claims 4 and 5 above.

5.   Claims 2, 3, 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, and 33 - 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zolnowsky (US Pat. 5,826,081) in view of Sullivan (US Pat. 5,438,680, and further in view of Najork et al. (US Pat. 6,377,984).

Regarding **claim 2**, Zolnowsky and Sullivan did not clearly specify the step of assigning a task comprising selecting an empty task queue. Nevertheless, this feature is shown in Najork et al.'s invention (col. 3, lines 22 – 33). Therefore, it would have been obvious for one of ordinary skill in the art, at the time the invention was made include the teaching of Najork et al.'s invention to Zolnowsky and Sullivan to better load balancing the tasks by utilizing all of the empty queues while not overloading other busy queues in the system.

Regarding **claim 3**, Zolnowsky discloses the method of claim 2 wherein selecting

comprising determining whether the selected task queue is in a busy state (col. 2, lines 18 – 28,

col. 8, lines 19 – 36).

Regarding **claim 33**, Zolnowsky discloses in a multithreaded computing environment, a

method of processing computing tasks (fig. 4A, 4B, and 5), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract);

defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(fig. 5, abstract);

associating each task queue with a respective worker thread (col. 2, lines 18 – 28);

from a work thread, processing a task from a task queue not associated with the thread

(col. 2, lines 18 – 28).

Zolnowsky did not clearly teach the process of assigning a task to a task queue in an

essentially random fashion. This feature can be found in Sullivan in which tasks are simply

assigned to processors in a generally random fashion (col. 6, lines 35 – 61). Therefore, it is

obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this

feature to Zolnowsky to optimize the system performance with task assignment.

However, the combined references of Zolnowsky and Sullivan did not clearly specify the

step of assigning a task comprising selecting an empty task queue. Nevertheless, this feature is

shown in Najork et al.'s invention (col. 3, lines 22 – 33). Therefore, it would have been obvious

for one of ordinary skill in the art, at the time the invention was made include the teaching of

Najork et al.'s invention to Zolnowsky and Sullivan to better load balancing the tasks by utilizing

all of the empty queues while not overloading other busy queues in the system.

Regarding **claim 36**, Zolnowsky discloses the method of claim 33 further comprising,

from a work thread, processing a task from the associated task queue (col. 2, lines 18 – 28).

Claims 8, 9, 11, 12, 17, 18, 20, 21, 26- 27, 29, 30, 34 and 35 are rejected on the same

ground as stated in claims 2 and 3 above.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. US 6,484, 224 B1 and US 6,477,586 B1.

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Lilian Vo whose telephone number is 703-305-7864. The

examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, William Grant can be reached on 703-308-1108. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

                                              Lilian Vo
                                              Examiner
                                              Art Unit 2127

lv
October 30, 2003

                                              NANKHAH
                                              PRIMARY EXAMINER